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R E M A R K S

The Office Action issued January 7, 2004 has been received and its contents have been carefully considered.

The provisional allowance of claims 3, 6-10 and 12 is noted with appreciation.

Applicants have amended independent claims 1 and 11 to more "particularly point out and distinctly claim the invention" as required by 35 USC §112. These clarifying amendments are not intended to change the meaning and/or scope of protection afforded by these claims, but are merely for the purpose of rendering these claims more definite.

Dependent claim 2 has been amended to delete the second "wherein clause" and to also clarify its meaning. The second "wherein clause" has been added as a separate new dependent claim 14. A new dependent claim 13 has also been added to recite an initial step of determining the "particular function".

Independent claim 12 has been amended to delete the alternative clause "or for balancing the circuit...". This claim has also been amended in the interest of clarity under 35 USC §112 in the same manner as claims 1 and 11.

Independent claims 1 and 11, as originally presented, have been rejected under 35 USC §102(b) as being anticipated by the U.S. Patent No. 5,414,280 to Girmay. This rejection is respectfully traversed because Girmay does not maintain the emitted light of a diode substantially constant "from solely a combination of the forward current and forward voltage of the diode...". In both the embodiments of Fig. 1 and Fig. 5, Girmay measures the output power, and maintains this power substantially constant, by means of a feedback loop.

On page 2, second paragraph, the Examiner notes, correctly, that "a preparatory procedure [is] performed once to determine the relationship between the forward voltage and the forward current.". Then the Examiner goes on to state: "However, claim 1 does not recite or imply such a limitation". Applicant respectfully disagrees. If the light power is determined, or maintained substantially constant, from solely the forward current and forward

voltage of the diode, "based on the assumption that at a constant light power the forward voltage is a particular function of the forward current", it must be assumed that this particular function has been determined initially. Otherwise, it would not be possible to carry out the method.

On page 3, the Examiner states that "the method step [of claim 1] is anticipated by the combination of Figs. 2-4 [of Girmay] where a measurement of the output power of the laser is determined based on the combination of the forward voltage and the forward current as illustrated in Fig. 3 and described in the Abstract." This statement is believed to be incorrect for two reasons:

(1) Claim 1 does not call for "measurement" of the [light] output power of the laser diode. This power is already known from the given combination of voltage and current. Applicants' claim simply calls for "maintaining the light power...substantially constant."

(2) In this statement, the Examiner omits the important word "solely". In Girmay, the light power is maintained substantially constant by controlling the forward current and voltage in response to the power that is "detected by a photodetector" (column 2, line 18).

The Examiner concedes that Girmay "in column 2, lines 5-25, does disclose monitoring the output power" of a laser diode. It is just this monitoring step which is avoided in applicants' method recited in claim 1.

Finally, the Examiner rejects claim 1 because the laser is driven "in accordance to the relationship of the voltage and current." Claim 1 can be understood this way, but there is more than one relationship between voltage and current. According to claim 1, the diode is driven in accordance with this relationship at constant output power. Girmay drives a diode in accordance with the relationship of voltage and current at constant temperature (as illustrated in Fig. 3).

As previously explained, these two relationships are completely different. This becomes apparent when the relationship "at constant light power" is also entered into the diagram as is done in Figs. 7-9 of this application, but not in Fig. 3 of Girmay.

Applicants' independent claim 11 stands rejected over Girmay because:

> "Applicants' arguments on page 12, regarding claim 11, are considered an admission of obviousness since applicant agrees that the relations of Figs. 2 or 4 would suggest the claimed relationship. Therefore the person having ordinary skill in the art...will deduce

the relationship of claim 11, as portrayed in Figs. 2-4."

It is assumed that the Examiner refers, in this regard, to the following sentence in applicants' Response dated August 20, 2003 on page 12, lines 1-3:

"Applicants agree that in conjunction with Fig. 2 or Fig. 4 it would be possible to determine these relations as well. However:"

In this Response, applicant goes on to state:

"Consequently, claim 11 is believed to be allowable because it refers to a method step [that] Girmay not even suggests at all, not to mention the special way of performing it which is specified in claim 11."

What applicants did do on page 12 of the Response dated August 20, 2003 was to point out that lines showing the relationship between the forward voltage and the forward current, that must be obeyed to obtain constant output power(s), are not entered in Fig. 3 although this would have been possible in conjunction with Fig. 2 or Fig. 4.

Apparently, applicants' language "...it would be possible to determine these relations as well" has been misunderstood.

First: The diagrams of Girmay with their arbitrary units only allow for entering qualitative lines in order to

show what kind of relationship is meant. They do not permit one to determine the quantitative relationship for a particular type of diode or even a particular sample. However, this is the purpose of the method steps of claim 11 (and claim 12).

Second: Even if the axes of such diagrams are precisely scaled, this method of determining the quantitative relationship remains cumbersome because, prior to using diagrams, they must be drawn, and prior to drawing these diagrams, the data they are to represent must be measured. There are much more data necessary to draw the diagrams than are needed to obtain the relationship, so there would be much unnecessary work.

Third: If one already knew that the relationship to be determined can be considered linear, there are only two curves needed in each of the diagrams. But what if the relationship is non-linear or the "shape" of the relationship must still be determined? In these cases, more curves are necessary and the measuring and drawing effort increases proportionally.

Fourth: The temperature parameter to be held constant during acquisition of each particular curve here would not

be the ambient temperature, but the chip temperature. Achieving constant chip temperature while the diode current is varied for measurement is a considerable effort. To determine the current-voltage relationship needed for stabilization, it is only necessary to vary the chip temperature without any need to know when it has what value. When using curves measured at different temperatures, the actual temperature value is also unimportant, but the curves must reliably have been determined at constant chip temperatures or else the result would be wrong. Consequently, the whole effort of holding the chip temperature constant would only serve the possibility of using curves and nothing else.

For these reasons, applicants did not consider such a method to be worth pursuing. Agreeing that it is possible to be performed is like agreeing that it is possible to walk from New York to San Francisco in a discussion about faster and safer airplanes. No doubt, it is, but still a person of ordinary skill will not be able to deduce special features of a Boeing 747 from the knowledge of a footpath across the continent.

Claim 11 does not recite simply a method to determine the crucial relationship but a particularly good method. Girmay does not provide any hints on performing the method of claim 11. The fact that Girmay disclosed a diagram into which a current-voltage relationship at constant optical output power can be entered, does not lead to the awareness that such a relationship is useful nor any insight on how to determine it in some favorable manner.

Regarding the rejection of claim 11, the Examiner states:

> "Figure 4 [of Girmay] illustrates at different temperatures the forward voltage and the forward current of Figure 3. It also illustrates the forward voltage necessary at different optical power outputs and temperature, where the power output can be set to a particular output based on the forward voltage as described in the abstract and column 2."

There is no relationship at all between the contents of Fig. 4 of Girmay and that of applicants' claim 11 except for the fact that both have something to do with LED's or laser diodes.

Setting "...the power output...to a particular output based on the forward voltage..." is something quite different from maintaining it at a constant level using a control device as stated in claim 11.

In conclusion, therefore, independent claims 1 and 11 are believed to distinguish patentably over Girmay. Since the only remaining independent claim in this application, claim 12, has been indicated as being allowable, in view of its recitation of "chasing the time progression of the light power during a power up procedure and setting the parameters such that the power remains constant in spite of the increasing temperature of the diode after power up", this application is believed to be in condition for immediate allowance. A formal Notice of Allowance is accordingly respectfully solicited.

Respectfully submitted,

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APRIL 2, 2004
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Date APRIL 2, 2004